

COMMENCEMENT
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ADDRESS

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Centenary Movement

OF

Thought

BY

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THE
CENTENARY MOVEMENT OF THOUGHT.

The recent celebration of the inauguration of Washington has brought to a close the series of centennial celebrations which began thirteen years ago with the Declaration of Independence. The commemorative ceremonies, spectacles, and festivities, may sometimes have been unmeaning, and no one will pretend they have not at times been marred by bad taste. There is no movement without friction. And every noble exertion may run by excess into its opposite. But, as human affairs go, that man is surely not to be envied who has failed to derive from these national commemorations matter for edification and calm assurance. It is always a sign of healthy life when a nation rehearses to itself and glorifies the noble deeds which the fathers did in the days of old. In the ideal there is life forever. And as I have seen the nation nourish its spirit on the rich memories of its founders, and dedicate itself anew to the divine ideas they sealed upon this continent with their blood, I have felt that, however serious, new, and perplexing

were the problems of modern life, a redeeming ardor from the past would enter into the present, and the second century of the Republic's existence be suffused with a glory overshadowing even that of the first.

The institution of the centennial celebrations, and the hearty manner in which they were observed, indicate that the political instincts of the American people are sound and healthy. But man is a rational as well as a political animal. And reason is the crowning glory of the world. Above all things, therefore, the movements of thought deserve frequent recollection and examination. The tree of knowledge, like the tree of life, draws its vitality from the generations that are past. We are and shall be largely what the spiritual currents of the ages make us. In this process freedom and necessity are at one. The individual is moulded by the invisible but not less real spirit of his race to issues in which he finds with joy the realization of his highest self. Surely, then, nothing can more closely touch us than the stirrings of that organism of thought and sentiment in which our fathers and our fathers' fathers have lived and moved and had their being. Children of the *Zeitgeist* we would follow its movements over the century. As the survey is broad, and the time short, we must not allow eddies and side currents to draw us from the main channel, even though at times it appears no deeper than the adjacent river-bed, or even loses itself altogether in the sand.

The most obvious difference between the culture of to-day and that of the early days of the Republic is a characteristic

that renders the undertaking upon which I have perhaps rashly ventured, all but impossible. "Many shall run to and fro, and knowledge shall be increased," said the prophet; and our century has been destined to fulfill the prediction. It is true that the mediæval endeavor to "shut up the words, and seal the book, even to the time of the end" had collapsed as early as the fifteenth century, when the infinite mystery and splendors of the world broke upon the benighted spirit of the West as centuries before they had lain reflected in the clear eye of the all-seeing Greek. But Hellenic science had been for the most part swallowed up of time; and speculation reeled for want of a solid basis. That in these circumstances the literature of classic antiquity should have formed the staple of higher culture in the sixteenth century was as natural and inevitable as its pretensions in the nineteenth, after modern literature and science had grown up, were anachronistic and absurd. The seventeenth century forms an ever memorable epoch in the history of mankind. It witnessed the triumph of the sublime astronomical system of Copernicus and Galileo, a system which, while it illustrated the might of human reason, was infinitely humbling to human pride. With the geocentric theory fell the venerable belief that the children of earth were the final object of creation. It was reserved for Darwin to determine man's position in the organic series. But his place in the vast illimitable universe of space was settled once for all by the physicists and astronomers whose discoveries culminated two hundred years ago in the "Principia" of Newton. To the same

century belong the physiology of Harvey, the new anatomy of the French and Italian schools, the experimental science of Boyle, Pascal, and Torricelli, the analytical geometry and calculus of Descartes, Newton and Leibnitz. Yet, notwithstanding this enormous accumulation of scientific treasure, it was still possible for a single mind to compass it all. I remember Mr. Gladstone telling a body of students, of whom I was one, that Leibnitz was the last of the intellectual heroes who mastered the entire realm of the knowable. Leibnitz died in 1716. But I believe the feat could have been accomplished even in the last third of the eighteenth century by a genius like Goethe had he only possessed the encyclopaedic taste, and it was to a very considerable extent actually achieved by Kant, who, however, lacked the literary and artistic sense of which Goethe was the supreme embodiment. Such universality of knowledge was the ideal of the philosopher of the American Revolution. The University of Virginia still preserves a manuscript volume of its founder's, containing a list of books and directions for the library; and it is refreshing for the oppressed specialist of the present day to note the air of self-confident omniscience with which Jefferson causes all human knowledge to pass before him, and, like a true son of the Parisian *Aufklärung*, pronounces it all very good, except metaphysics!

Metaphysics is only an attempt to focus the scattered rays of human knowledge. Consciously or unconsciously every man is a metaphysician. Jefferson did not feel the need of a

conscious system, because he lived in an age of unbroken light. But the year that heard the Declaration of Independence witnessed also the publication of the "Wealth of Nations." Immortal products of human genius, they mark also the arrival of the age of democracy and of industry—twin daughters of the rights of man. The realm of letters had always been a republic; but the incorporation of science has made the circle of culture wider, less exclusive than before. It has also brought about and necessitated, in the intellectual world, that division and co-operation of labor, whose advantages in manual operations Adam Smith characteristically illustrated from the making of a pin. Human power is limited; but by practice everybody can learn to do at least one thing well. The success of a mining or manufacturing enterprise depends upon the organization of the skill of the workmen. The vast enlargement of the boundaries of knowledge in modern times is due to specialized work on the part of scientists and co-operation with one another in manipulating results. In the warfare with the powers of darkness each soldier chooses his own point of attack; but he waves his torch to tell his comrades where he stands and what he has done, and the ranks are kept filled as the ever growing circle advances. Thus the mind of man expands apace. But the culture of any individual man is apt to be restricted, subdued to what it works in. At the beginning of the century, Alexander von Humboldt expatiated at large over the broad domain of the sciences of nature; at its close, Asa Gray had mastered a part of one division of the single science

of botany. In the historical sciences, too, the growth of knowledge in the race has gone on along with the specialization of knowledge in the individual. Since, therefore, the educated man in modern times, be he humanist or naturalist, must become a specialist, it would seem very desirable in the higher education of our youth that some diversity of subjects should be required. We are in danger of sacrificing breadth to intensity of culture. And for my own part, I look with some alarm on the present fashion of encouraging students no longer to take a general course in language, literature, history, mathematics, science, and philosophy, the educational value of which has been attested by experience, but to pass their green and salad days in mimicking the original research of a Faraday or a Darwin. For the race education consists in the discovery of something new; for the individual this cannot begin with profit until he is in possession of some considerable portion of the treasure mankind has stored up. Our educationists are overlooking the dependence of reproduction upon assimilation. There can be no creation, even in the realm of mind, without materials. These "original investigations" which callow youth are now-a-days so often required to make on subjects no mortal has ever thought of before, or is likely to think of again, have at least the merit of novelty, and so they often pass for flights of genius. But even genius needs an atmosphere. There is no such truly original investigator in the world as the baby. But the baby would not succeed better by refusing his mother's milk.

I have been speaking generally of the vast multiplication and specialization of knowledge during the century. It would be obviously impossible here and now to describe the process in all its details. But as the growth of the sciences consists in the discovery of more general laws, which bind together the facts and laws already established, the scientific achievements of the century may be illustrated by glancing at some of these ultimate generalizations. In the natural and physical sciences the theory of evolution and the law of the conservation of energy would suggest themselves to everybody; and with these, Professor Huxley, in his masterly sketch of the advance of science in the Victorian period, associates the theory of the molecular constitution of matter. These may be briefly described before endeavoring to follow the movement of the historical and philosophical sciences, to which must be added theology, once the proud queen of all.

What are things made of? is one of the first questions of children and of thinkers. In the infancy of human thought this germinal principle was sought in concrete substances like water, air, and fire; and at a later stage in such abstractions as number and infinity. But the doctrine that matter consisted of minute indivisible particles diffused through empty space, carries us back to the fifth century before Christ. This was the famous atomic theory of Leucippus and Democritus, which, after agitating the ancient world, has been a fermenting principle in the modern almost since the downfall of scholasticism, and which, in our own century, seemed to gain renewed

confirmation from the chemical discoveries of Dalton. But from the very first the atomism of Democritus has been confronted by an antagonistic theory, towards which modern chemistry seems to be drifting. This science is admirably typical of the centenary growth of knowledge. It was in 1789 that Lavoisier published his *Traité élémentaire*, which imparted a new spirit to the young and rising science of chemistry. The subsequent period has been devoted to observation of the phenomena exhibited by elements and their compounds, and to discovery of the laws of their combination and interaction. But in our own day the purely empirical stage is past; and the chemist, like the astronomer, is able to predict from present phenomena the character of future phenomena. His work is largely synthetic. Theoretically he sees the possibility of certain non-existent compounds, and with creative insight he calls them into being. As the mathematics of molar motion had unveiled the heavens and laid bare the mysteries of the infinitely great, so the mathematics of molecular motion is to-day reading the secrets of the infinitely little, nay, sketching the architecture of that impalpable world which eye has not seen nor ear heard. But the mind of man had already conceived it. For the latest report of the chemist is in singular accord with the theory of Aristotle. It supposes a homogeneous ethereal substance containing permanent whirlpools or vortices; and it affirms that the elementary units of the material world may be resolved into these vortices whose properties depend on their actual and potential modes of motion. This theory of the dynamical constitution of matter, which turns chemistry into a branch of mathematical physics, is one of the great scientific achievements of the age. Nor does its anticipation by Aristotle detract from the renown of chemistry. The modern scientist

has embodied the speculative conception of the philosopher in a larger experience, illuminated it by the evidence of mathematics, and expanded it into deductions that have stood the test of experimental verification. As the theory passes from the laboratory to the school, as it filters in dilution through the press, it is destined to effect a change in popular thought not unlike that produced by the astronomy of Copernicus. How startling to conceive of dead material things which we have always thought real solely because they are extended and solid, as absolutely nothing but invisible whirls of energy!

The theory of the molecular constitution of matter is the latest solution of the world-old problem what things are made of. But as things exist, so they cease to exist, or undergo change. And changes are not more obvious to us than they were to primitive man ten thousand or a hundred thousand years ago. Whether our ancestors hid themselves in lonely caves to escape the carnage of the bear and mammoth, or wandered in quest of shell-fish along desolate shores where winds and waves made wild commotion, or sat amidst their flocks and herds watching in awe-struck wonder the regular march of Orion, Arcturus, and the Pleiades, they saw, as we see, a world where nothing is at rest, where all things change, where birth seems only for the sake of death, and life is not so much a state of being as a constant process of becoming. Of course, they interpreted the universe by themselves. Of course, they attributed change to personal volition. They saw behind the shifting procession of natural events powers like themselves, though greater. And this primitive mythological theory of causation was not completely vanquished by the science of the Greeks. Though no place was left for it in the atomistic hypothesis of Democritus, it is true that, broadly speaking, mod-

ern scientific thought is distinguished from earlier by its rejection of all causes except known physical causes in the explanation of nature, and by its possession of the true laws of motion and equilibrium along with the numerous deductions to which they have led since first enunciated by Galileo and Newton. These laws, allied with mathematics in a fruitful union, have generated the ideal towards which all the sciences of nature are to-day restlessly striving. Their goal is nothing less than the deduction of all the phenomena of material bodies from mathematico-physical first principles. The scientist is not satisfied with the ascertainment of facts and their laws; he goes on to refer them to higher and ever higher laws, until he has forged a chain of demonstration connecting them with the first principles of statics and dynamics. He believes there is a mathematical formula, could human wit but find it out, that would express the present condition of the material world and all that it contains, a formula from which its subsequent phases could all be deduced and predicted, from the fall of a tree or the overflow of a river to the inundation of a continent or the collapse of the sun. The rise of this scientific ideal was heralded by Descartes and Hobbes. Its realization has been measurably approached since 1843, by the discovery of the law of the conservation of energy, which is a fitting climax to the physical laws established in the last three centuries.

The mathematicians and physicists of the seventeenth century had determined the laws of molar motion, the laws, that is, governing the movements of masses, whether terrestrial or celestial; but the phenomena of heat, light, electricity and magnetism, which do not depend upon molar motion, remained without any satisfactory explanation until the nineteenth century. The first step towards a sound theory was the discovery

of the correlation of the forces at work. Any one of them, it was found, could be transformed into any other, or all alike derived from a common source. It was next experimentally demonstrated that there existed a definite relation between heat and mechanical work. And it was also shown that molar motion re-appears as molecular motion, or heat, without any loss of energy, when a moving body is brought to rest by friction or collision. These truths contain the law of the conservation of energy. "The total energy of any body or system of bodies is a quantity which can neither be increased nor diminished by any mutual action of such bodies, though it may be transformed into any one of the forms of which energy is susceptible." When you raise a stone from the earth the energy you expend is not lost; it is potential in the stone as held in the air, and is exactly reproduced by its fall. At every moment of the process the capital stock of energy remained the same. And this is the history of all sensible existence. Force is constant and indestructible, but it undergoes continuous redistribution and transformation. If the matter composing our solar system originally existed in a diffused or nebulous state, its stock of energy was the same as at present, and the force released by the precipitation of nebulous particles into solid bodies has been radiated in the form of heat and light. Some of this heat is still imprisoned within our earth, the whole of which was once a mass of molten matter. And it occasionally manifests itself in earthquakes and volcanic eruptions. Thus, throughout the entire physical universe the law of the conservation of energy is found to hold good. The rains, rivers, winds and waves, which slowly wear away continents and fill up seas, execute simply the powers committed to them by the sun, when they first rose to vapory life beneath his genial rays. In the physiology of

plants and animals the same transformation and equivalence of forces has been demonstrated. And a Huxley or a Helmholtz would find no difficulty in tracing to solar radiations the cerebral, nervous, and muscular energy I am now exerting. Mr. Herbert Spencer has gone further. He professes to see in modes of consciousness transformations of physical forces in obedience to the law of the conservation of energy. But this law has meaning and application only where there is motion. And, though consciousness is connected with cerebral changes which must conform to the laws of physics, consciousness itself is not a motion on anything like a motion. So that there is no more justification to-day than there ever was before for invading the domain of mind with categories and standards borrowed from the material world. The subject of knowledge is impassably separated from the object of knowledge. The law of the conservation of energy is valid for the material world alone. Mr. Spencer's further application of it to mind is one of the many instances in his comprehensive philosophy in which pet generalizations are allowed to eviscerate facts they are inadequate to explain. This is why Darwin, the fairest critic of our century, writes to his friends: "Such parts of H. Spencer as I have read with care impress my mind with the idea of his inexhaustible wealth of suggestion, but never convince me. * * * * If he had trained himself to observe more, even if at the expense, by the loss of balancement, of some loss of thinking power, he would have been a wonderful man."

This brings us to the third great generalization of our century, the theory of physical evolution. In its most general form the theory is an old one. The belief in the transformation of species is common among savages, who have

many legends of the metamorphosis of men into wild beasts. And the whole philosophy of the Greeks was evolutionary. Evolution means that things were not once for all created as we now see them, but have reached their present condition only after passing through lower phases, and gradually ascending to higher. For a thousand years, from the time of Thales to the close of the schools under the Empire, this was the constant point of view of Hellenic thinkers, and it is nobly enshrined in the immortal system of Aristotle. But in the following centuries, as science died out, as communion with the living facts of the world gave way to crude and literal interpretation of the books in which Hebrew seers and poets had set down in lofty imagery their impressions of creation and divine providence, the evolutionary point of view was lost, and for the Hellenic doctrine of the eternity of the world with its endless series of evolutions and dissolutions there was substituted the hard dogma of instantaneous creation some few thousand years before. It was, therefore, something like a new discovery when in the eighteenth century Kant traced the evolution of the solar system from a primitive nebula in accordance with the laws of Newtonian physics. But the conception of the practically infinite duration of the world in past time was first brought home to the modern mind by the publication in 1830 of Lyell's "Principles of Geology." In opposition to the catastrophists, Lyell referred the formation of the crust of the earth to purely natural causes, whose adequacy, however, depended upon the postulate of the lapse of vast geological ages since the beginning. His theory triumphed. It satisfied the facts, and the demands of reason too. But if natural causes can account for the inorganic world, what of the organic?

Thus the question was shaping itself in the mind of Darwin. That evolution was the process of the living world Goethe and Lamarck had shown at the close of the preceding century. But the *how* and the *why* of organic evolution was still a mystery. Darwin cleared it up by his theory of natural selection or survival of the fittest. This theory was suggested to Darwin by his "long continued study of the works of (and converse with) agriculturists and horticulturists," as he wrote to Asa Gray, before it was given to the world. Breeders by conscious selection produce new varieties. The variations are given by nature. What man does is to select and perpetuate them in preference to others. Now in the case of undomesticated animals and plants, the perpetuation of certain varieties is brought about by the struggle for existence, which is the inevitable result of the fecundity of living organisms, which increase, as Malthus had shown in the case of man, far beyond the means of subsistence. Darwin does not prove that the earth has been inhabited successively by ascending species of living beings. That is an historical fact of which geology leaves no room to doubt. Nor is Darwin father of the idea that the higher are developed from the lower, and that no species is fixed and immutable. It is true that in the battle waged over the "Origin of Species," Darwin sometimes limited his own achievement, as his "Life and Letters" show, to a refutation of the dogma that species were immutable creations. And no doubt he did more than any of his predecessors to supplant this belief. But he did it, not merely by ascertaining that species have descended from other species, but by exhibiting the causes which led to their modification. Others before him had proclaimed the doctrine of transformation. He first discerned in the amazing fecundity of living

beings, their minute differences from one another, and the selective influence of environment, the factors and processes by which new species are developed out of earlier ones. This is the essence of Darwinism. All else is consequence or concomitant. How important this biological theory was felt to be is evidenced by the fact that in popular speech Darwinism is synonymous with evolution in general. And both are to-day accepted, in substance at least. Thirty years ago our fathers were quarreling over the question whether it was better to be descendend from a fallen angel or a climbing monkey. To-day the issue scarcely touches us; and we feel that it signifies little how we may have been begotten, since the great matter is what we are and may become. For us evolution is no longer regresssion to the ape, but progression towards the truly human, till it merges into the divine. On stepping stones of their *dead* selves men rise to higher things.

We have been speaking thus far of modern discoveries regarding matter, force, and life. And it is the advance of chemistry, physics, and biology which most strongly impresses the imagination, because of their application in relieving the miseries and adding to the comforts and conveniences of man's estate. These sciences have annihilated space and time, revealed a new heaven, and re-created the earth. A hundred years ago Washington took seven days to go from Mt. Vernon to New York for his inauguration; and he could not have made the journey in less than five days even had he not been delayed by receptions. But in that time you could in this age cross the ocean, or traverse the continent. In 1791 Jefferson wrote to the American representatives at Paris and Madrid that the quickest of their despatches were "of nine weeks, and the longest of near eighteen weeks coming." To-day the telegraph

flashes them under the ocean in as many minutes. Railroads, steamers, and telegraph lines are the nervous system with which modern science has endowed the hitherto unfeeling earth, and transformed its divided provinces and separated continents into a single sentient organism. Intercourse has removed prejudices, allayed passions, and established order. It has shown to all men the humanity of men. The old divisions between Jew and Gentile, Greek and Barbarian, Bond and Free, had long been opposed by the higher conception of the brotherhood of man. But what Stoicism and the Church failed to realize has been effected by the intercourse which modern science first rendered possible. A famine in India, an earthquake in China, or a flood like that which lately devastated the valley of the Conemaugh, sends a shock of sorrow and a response of sympathy and help throughout the entire world. It is impossible to overestimate the service to morals, international law, and practical Christianity of those scientific appliances which have overcome the obstacles set by nature to intercourse between man and man. This achievement of our century will not be dimmed by any other in the moral history of mankind. And beside it we can lay with pride our physical discoveries and inventions. Have we not meted out Heaven with the span, and comprehended the dust of the earth in a measure, and weighed the mountains in scales and the hills in a balance? Nay, what Isaiah could not conceive, we have analyzed the matter of the sun and the planets. We have turned the darkness of midnight into solar brilliancy. Our remotest ancestors were probably ignorant of the uses of fire; and the rude drill, by which savages produce it, is supposed to represent thousands of years of invention. From that to the flint and steel, and thence to the lucifer match was the work of centuries. Our own gener-

ation, however, has, by the use of electricity, taken a stride which belittles all the gropings of previous generations. Nor is it otherwise with the great practical arts of medicine, agriculture, and manufacturing. The preservation of health and the healing of diseases had scarcely advanced beyond the stage at which the Greeks left them, until a rational basis was found for them in modern physiology and zoology. Since then one after another of the scourges flesh is heir to has been met and conquered; and, though scientific medicine and surgery are still in their infancy, Koch's germ theory of disease has already proved a most potent and promising weapon of offense and defence, while Lister's antiseptic method has probably done more than any other invention ever made to alleviate human suffering. Bacon, the prophet of the modern scientific world, demanded a knowledge that should bear fruit to mankind. His hope has been fulfilled. Nor is medicine the only proof of it. In our own century agriculture, too, has been put upon a scientific basis. And those manufacturing and industrial operations, which have transformed the face of the modern world, superposed a new nature upon the old, and even reacted upon man, its creator, are, in large part, the result of the scientific discoveries and practical inventions of the last hundred years.

Yet, in considering the centenary movement of thought, we should leave our picture very incomplete if we stopped with these conspicuous features of the scene. "In the universe there is nothing great but man; in man there is nothing great but mind." And the century which has witnessed the amazing growth of the sciences of nature, has seen a complete revolution in the sciences of man. A new conception of human civilization whereby all previous history is rendered obsolete: this is the characteristic note in the thought of the nineteenth cen-

tury. The conception was forced upon the Anglo-Saxon mind largely by the victory of Darwinism, which is, therefore, often identified with it. But in Germany, the natal soil of the new idea, the two are kept distinct. Biological evolution may or may not be explained by natural selection; but in any event it is only an extension to animal life of a conception and method which three generations of German investigators had already applied with great success to human history.

Each in turn the civilized nations of the world contribute their central ideas to the thought of mankind. Within the last four hundred years Italy has given us Humanism, Spain Dogmatism, England Empiricism, and France Rationalism. The national point of view is determined somewhat by native temper, and somewhat by the preceding condition of thought. The Spanish principle of authority is in part a reaction against the sweetness and light, and license too, of the Italian Renaissance. The English appeal to experience and the French appeal to reason, though superficially opposed, are, at bottom, complimentary aspects of a single tendency. Both make for the liberation of man from the shackles of authority, which was the dominant idea and aim of the eighteenth century. But the Frenchman wields a more remorseless logic than the Englishman; and he shrinks from no conclusions. English thinkers had made reservations in favor of established institutions, religious and political. But the school of Voltaire had no reverence for crown or mitre, and was resolutely set on absolute emancipation from authority and conventionality. Here, as before and since, it was the mission of France to stand for ideas which others dared not follow; whence her proud boast of saviour of the nations. And never surely will it be forgotten, so long as man retains memory of his greatest spiritual blessings, that it

was French sinew which laid low the thicket of shams and conventionalities that impeded human progress, and French courage that bade men look for the first time at the facts of the world and of life in the pure light of reason alone. But this rationalism was fraught with two serious consequences. It involved a complete break with the past history of mankind. And it left society an atomistic collection of individual wills, each proclaiming, like Coriolanus:

"I'll never

Be such a gosling to obey instinct, but stand

As if man were another of himself

And knew no other kin."

These disastrous results of the too absolute idea of France—I mean the divorce from the past, the substitution of individual caprice and licence for authoritative objective law, and the suppression of the instincts and sentiments by abstract reason—were overcome by the pregnant idea with which in the last part of the eighteenth century Germany revolutionized all previous notions of human civilization, and marked out the course of historical investigations which in countless lines our century has been following. Do you ask what this mighty leaven is? Behold it in the daily bread of our intellectual life. Like the air we breathe, it is an unconscious possession. But whenever we speak of society as an *organism*, whenever we conceive of languages, customs, laws, institutions, arts, literatures, and religions as *organic growths*, whenever we regard the whole life of man—intellectual, moral, and physical—as a *gradual development*, we are adopting a mode of thought of which our race had no inkling before the last third of the Eighteenth century, and which was first proclaimed in the

immortal "Fragments" of the youthful Herder. "This to be sure is a madman or a genius," exclaimed Wieland. "He is at any rate the only one for whom it is worth *my* while to publish my ideas," said Lessing. Now the message with which this youthful prodigy electrified his contemporaries is the German contribution to human thought, and the animating principle of its movements from that day to this. It consists in the substitution of *fieri* for *facere*—of spontaneous evolution for intentional institution—as leading conception in the study and interpretation of human society and human civilization.

Hence a new attitude toward the past. Heirs of all the ages, we see in all the past generations of mankind flesh of our flesh and spirit of our spirit. Under the German idea of organic development, the most savage and remote tribes become instinct with living interest to us. Like the fœtus in the womb, they register the stages of our own existence and history; and we linger fondly and sympathetically over their growing variations. We follow them through savagery to barbarism; and as they kindle the lamps of civilization at Athens, at Jerusalem, and at Rome, we recognize the lights that have guided later generations, and, like fixed stars, still shed their quickening radiance on our own. For us, humanity is a single organism, and we have burst every horizon that would limit our view of its vast illimitable life.

This vital, absorbing interest in the past is, I repeat, peculiar to our own century. Dr. Johnson dismissed Hawkesworth's *Voyages* with the contemptuous remark, "One set of savages is like another." He could not enter into the life of societies different from his own. And, though the eighteenth century was not behind its predecessors in classical studies, it never got a firm grasp of Greeks and Romans as living men. Dr. John-

son, as became the apostle of Saxon common sense, expressed, only more emphatically, the opinion of Voltaire, when he said: "The Athenians of the age of Demosthenes were a people of brutes, a barbarous people." It is the tendency of most generations to regard themselves with complacency, but it was never more pronounced than in the age of rationalism and "polite manners." Their moral prejudices blinded them to the worth of the past; and even had they felt it, how could they have opened the closed door of the treasure house?

For they were hindered not only by prejudice, by lack of sympathy with a culture, religion, and politics different from their own, but also by the magnitude of the undertaking and the scantiness of their outfit for achieving it. During the seventeenth and first half of the eighteenth century, while other literature flourished, history, that delicate plant that lives only in the air of freedom, had wilted and withered until it became a byword and a reproach. Meanwhile, the field was constantly enlarging. And though more remote parts had been cultivated, it must not be forgotten that most of the ancient, and many of the modern writers had limited themselves to contemporaneous history. Thucydides, Tacitus, and Clarendon will ever remain models of the old or artistic type of history, which aimed chiefly at portraiture and reflection, but they could be of little service to a writer, who, in the eighteenth century, desired to reproduce the entire social life of Greece, Rome, or England. Nor, in any case, could such a writer succeed. For, apart altogether from his unscientific conception of society, he had no suspicion of the variety and complexity of historical forces, and lacked insight into the laws of wealth and industry. It was men of historical genius and vast erudition, it was Montesquien and Gibbon, who ascribed the fall of

Rome to such causes as the transportation of the gold and silver to Constantinople, or the refusal of the soldiers to wear defensive armor.

In the course of Providence the shortest way is not always a straight line. But though the time of waiting was long, the human mind was destined ultimately to attain truer conceptions of its doings and manifestations in the past. With the appearance of Herder the hour had arrived. As at other critical periods, a number of pregnant circumstances combined to make the revolution effective. Herder flung out his new conception of mankind as a growing organism, and declared that "the whole history of humanity is pure natural history of human forces, actions, and instincts, according to place and time." Germany, recovering from the material, intellectual, and moral exhaustion of the 'Thirty Years' War, had entered upon that career of marvellous scholarship which enabled her to carry the fruitful idea of her seer into every department of knowledge. At the same time the appearance of the "Wealth of Nations," like a lamp lit in a dark place, at once illuminated many of the deep, obscure, and hitherto unsolved problems of political history, the study of which has ever since remained in the closest alliance with economics. Lastly, that great upheaval of society, called the French Revolution, was a fearful revelation of social forces which had hitherto lain unsuspected beneath the *ancien regime*. As the calm had lulled men in the present, so the storm drove them back to the past, but with entirely changed notions of man and civilization. Under the notion that society is a vast aggregate of forces, developing according to laws of its own, all history has been re-written. And the result is that with the single exception of Gibbon, the historians of the preceding twenty two centuries have been completely superseded

by the historians of the century in which we live. Contemporary history is sociological; earlier history was individualistic. Our broader point of view, our deeper insight into social causes, our fuller knowledge of the facts, separate our historical writings *to toto caelo* from those of preceding centuries. But as works of literary art, as models of form and expression, mankind will continue to read with delight the products of the old artistic type of history, which it is the glory of the Greeks to have created, and adorned by compositions that remained an unapproachable ideal for sixty generations of mankind.

The first example of the modern historical method was furnished by Winckelmann's History of Greek Art. Applying the idea of historical development to a single branch of culture, he described its growth, phases, and decay as if it were a natural plant. He found the conditions of these changes in the peculiarities of Greece, of Greek character, and Greek civilization — in climate, air, race, religion, customs, and political development. This was in 1764, two years before the appearance of Herder's "Fragments." Undoubtedly Winckelmann gave new life to antiquity. But he had not the historical divination which enabled Herder first to see in early Greek heroes chiefs of clans, and not conventional princes or princelings; or to catch the spirit of primitive mankind in their songs, epigrams, fables, and epics; or to originate a new conception of the growth of civilization, and apply it with success to literature, law, politics, and religion. Herder sowed the seed of the new German idea. And, lo, the fields were soon white with harvest. Schelling and Hegel reconstructed philosophy; Niebuhr and Savigny re-wrote the history of the Roman state and Roman law; Frederick Schlegel, Bopp, and Jacob Grimm created comparative philology; Ritter and Alexander von Humboldt phy-

siographical geography; and William Grimm entered upon a new line of research, which, in our own day, is taking shape as comparative mythology and religion. Here was a *magna instauratio* of the humanistic sciences. And the movement, which has absorbed the best minds of our century, is still in full force. So that we, who have been born too late for much that is striking and heroic in history, have yet entered into the fruition of that kingdom of man, whose coming Bacon foresaw and longed for, but whose method and significance he only faintly discerned.

Our boon, however, has brought its burden and its task. It was inevitable that the new kingdom of man should resist the pretensions put forward in the name of the kingdom of Heaven. And in America, at least, we cannot say that peace has yet been restored. Bacon had no consciousness of our problem, because he sharply separated theology and science, taking the one on authority and the other on the evidence of complete induction. It was an indolent, not to say cowardly, way of establishing religious faith; as much opposed to the central principle of Protestantism as to the dictates of honesty and common sense. And in a democracy like ours, where there is no privileged class or church, a return to Bacon's device, even though in the supposed interests of religion, is a manifest outrage upon conscience and intelligence. It is true that faith is the substance of things hoped for, the evidence of things not seen. But the hope must have an intelligible basis; and the unseen must rise from the margin of the seen. I do not mean that every man must be a philosopher. Now, as always, the vast majority will get their religion as they get their beliefs and prejudices about other things; they will take it from the form and pressure of their social environment. But I mean that

whenever a man does begin to reflect upon the subject, he will recognize that religious faith demands the support of evidence in precisely the same way as scientific belief or hypothesis.

In saying this, however, I shall not be understood to attach much importance to the so-called warfare between natural science and religion. The conflict is an imaginary one, so insubstantial that I can liken it to nothing but the still more imaginary reconciliation. How any discoveries in astronomy, geology, or biology should permanently affect a man's sense of his eternal life with the Spirit of all spirits, remains absolutely inconceivable. And, in truth, the so-called warfare between science and religion never had any other meaning (a few verses of the Bible apart) than the natural inertia of ignorance when acted upon by knowledge. In the history of mankind there has been a deathless struggle between science and nescience. But you miss its essential features when, following the mythological instinct, you personify nescience as the Christian Church, and see in its resistance merely the hand of priestly power, cunning, and ambition.

The religion of Christ has nothing to fear from natural and physical science. And, excepting always a few passages like the account of creation, neither has the most literal theology that has ever been extracted from the Bible. But Biblical theology cannot plead the same independence of the historical sciences. The sanctity of religion could not, and should not, protect its literary documents from re-examination in the light of the new German idea and method which during the century have revolutionized our notions of all other branches of human civilization. Has the flood of love and light with which Germany has warmed and illuminated the past quickened all the sciences of man, save that which deals with the most massive and perma-

nent factors in human life? This surely is inconceivable. The German gift of the power to interpret other ages and civilizations by means of the historical and comparative method has, in fact, achieved more astounding results in dealing with the Bible than with any other subject. Whether we will or not we can never again think of that wonderful book as the men of the eighteenth century thought of it. You may abuse the Biblical critics from Strauss and Bauer to Renan, Kuenen, and Wellhausen; but all the same you cannot keep what is scientific in their views from fusion with the thought and culture of our age. This, however, need not prevent us from seeing that the Old Testament is a faithful record of the growing apprehension and reverence of God by his children; and that the New Testament gives us, in the life of Jesus of Nazareth, a wonderful fulfilment of prophetic yearning, though in a far higher sense than mechanical interpreters were wont to suppose;—fulfilment in a life which is, shall I say, the miracle of history, or rather the clear revelation of the fatherhood of God.

“They are all based on history,” says Lessing, in *Nathan der Weise*, of the three great religions of the world. Christian theology, therefore, must be progressive; it can never stand still. When Lord Macaulay declared it stationary, he spoke in the spirit of the old, not in the spirit of the new and evolutionary history. We must learn in matters of faith, too, to

“ Rejoice that man
Is hurled from change to change unceasingly.”

Or, still better, we have the alternative of a faith so grounded on the eternal verities and established in the soul as to

be independent of time and circumstance, which form the subject of history. The witness of the spirit can save faith from shipwreck amid the shoals and quick-sands of that Biblical criticism, which no broad thinker can to-day ignore.

Here faith and philosophy would clasp hands. For what the speculative thought of the century seems to be making ever clearer is that the old divisions between man and God, God and the world, natural and supernatural, knowledge and revelation, purpose and causation, are in large part at least arbitrary and illusory; and that a philosophic conception of all existence leads to the belief in an infinite spirit, revealing itself in diverse forms and with various degrees of reality, but reaching its highest manifestation in man, who not only exists but is conscious of his existence, and as special partaker of the life of God may be truly said in Him to live, and move, and have his being. If I am mistaken in regarding this as the religious outcome of the centenary movement of thought, it is at any rate a consummation devoutly to be wished.